BLANKOM®

Professional Headend Solutions

Operating instructions

Bus Extender

with 8A-power supply

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BEB x00

Part N°: 904x.0x

IMPORTANT CUSTOMER INFORMATION

Dear customer,

Please note that the maximum specified current supply of the power supply must not be exceeded, otherwise there is a risk of irreversible corruption of the module.

Important!
Determine before startup, the current consumption for all of the modules currently connected exactly.

If the stated in the data sheet maximum current is being exceeded please reduce the current load by redistribution or reduction of the connected modules so that the maximum current is no longer exceeded.

With kind regards
Your Blankom team service

1. Safety and operating instructions

When assembling, starting-up and adjusting the modules, it is necessary to consider the system specific references in the manual instruction!

The modules may only be installed and started up by authorized technical personnel!

When assembling the modules into the receiving points, the adherence of the EMC regulations is to be secured!

The assembly and wiring have to be done without voltage!

All active modules may only be operated with the Headend Controller HCB x00 or Bus Extender BEB x00!

The main voltage and the operating voltage of the modules working by DC have to be in complience to the operating parameters described in the technical data.

With all work the defaults of the DIN EN 50083 have to be considered! Especially the safetyrelevant execution of the DIN EN 60728-11 [1] is necessary!

2. Device variants

BEB 200	9047.01 Bus Extender with 8A-power supply (100 ... 240 V~ input)
BEB 300	9048.01 Bus Extender with 8A-power supply (48 V– input)
BEB 300	9048.02 Bus Extender with 8A-power supply (48 V– input)

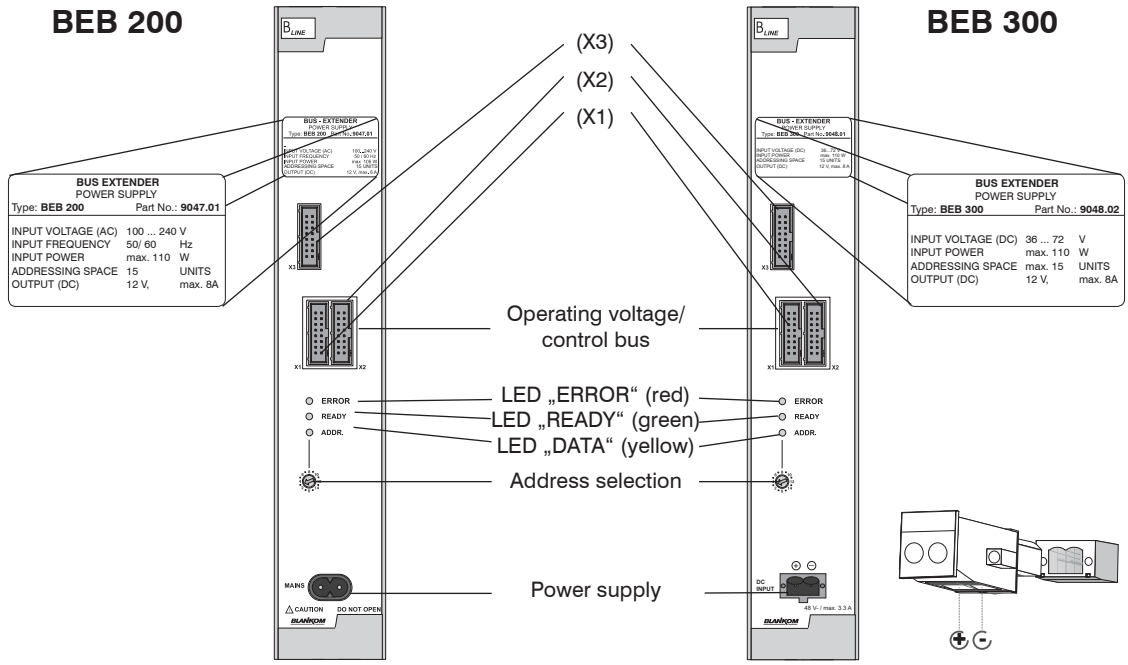
3. General

The Bus Extender BEB x00 is a module of the head end system B-LINE but can also be used for the C-LINE/ C-LINE⁺ head end system. The B-LINE is a complete system for the middle sized distribution network, while the C-LINE/ C-LINE⁺ is for smaller distribution networks. All active modules are programmed at the central Headend Controller (HCB x00).
The individual modules will be addressed at the address switch at the Bus Extender (line) and the respective modules (position).

The status of the individual modules will be displayed by colored LEDs:

- Red - ERROR Operating voltage failure
- Green - READY Operating status
- Yellow - ADDR. Remote control access or redundancy function

4. Front view

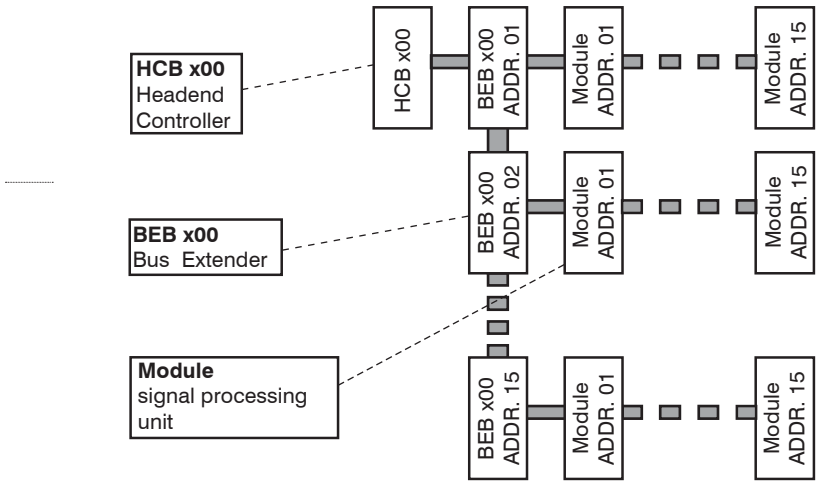


5. Functional description

The Bus Extender BEB x00 is the necessary extension module for the head end bus system. It is equipped with 3 bus connection sockets. The sockets X1 and X3 are equivalently occupied and are serving the vertical bus extension. The X2 socket of the BEB x00 is responsible for power supply of signal processing units (modules) within the respective line. It also defines the address of the line and canalizes the data transfer (see chapter 6). The total power consumption of the respective line (all connected modules within one line) may not exceed the current limit of the BEB x00. The ADDR. switch position “0” is switching the BEB x00 into redundancy operation status. Two BEB x00 will be switched parallely. The left/ first (ADDR.= 1...15) canalizes the data transfer, the right/ second BEB x00 (ADDR.= 0) suplies current/ power. The left/ first BEB x00 overtakes the power supply of the respective line in case of a failure (see chapter 7)

One address is made up of two parts. The fist address-part will be allocated with the address selection switch of the BEB x00 for the total line (01/ xx ... 15/ xx) and indicates the address of the respective line, the second part will be allocated with the address selection switch at the connected modules (xx/ 00 .. xx/ 15) and indicates the address of the respective module within the line. (see chapter 8)

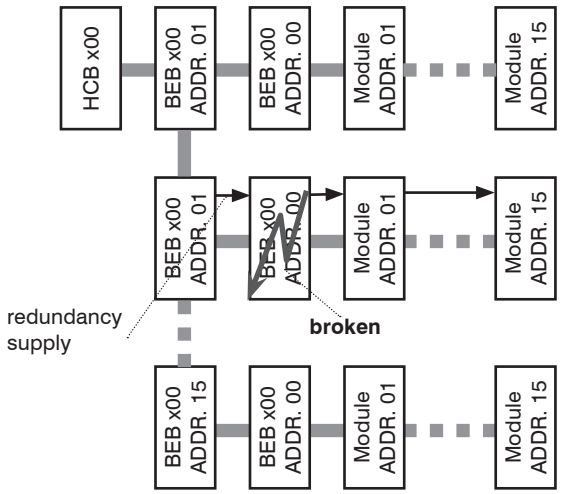
6. Head end bus structure



The number of the possible module connections (01 ... 15) to a BEB x00 depends on the total power consumption of this line!

7. Redundancy circuit

(Line redundancy)

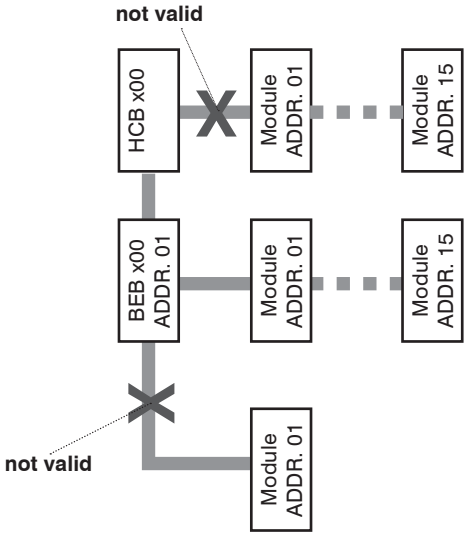


Description of the power supply redundancy (line redundancy)

- Adjustment of the address 00 at the right Bus Extender per line
- Adjustment of the address (1 … 15) at the left Bus Extender per line

The left/ first BEB x00 will automatically take over the current supply of the line if the right Bus Extender is failing.

8. Invalid mixed alignements



Mixed alignements on which the modules may be connected directly to the main-bus (HCB x00 at X1/ X2, BEB x00 at X1/ X3) and at the line-bus (BEB x00 at X2) are not valid.

9. Technical data

Address extent

Extended address range (Line address)	1 … 15
Address for redundancy	0
Modules address range (Module address)	0 … 15

Power supply BEB 200

Main voltage	100 ... 240 V, (+10%/ - 5%)
Voltage frequency	47 … 63 Hz
Main connector	built in connector EN 60320-1/ C8 (IEC 320 C8) [3]
Internal device fuse	G5 x 20, T4A (IEC 127-2/ V)
Power consumption	max. 110 W
Output voltage	12 V
Ripple noise ratio	66 dB
Current drain	max. 8 A**
Current limit	yes (9 A typical)
Short circuit protection	yes
Overvoltage protection	yes (≤ 14,5 V)*
Protection class	II according DIN VDE 0860 [4]
Protection system	IP 20
Radio noise suppression	according DIN VDE 0871 (curve B) [5]

Power supply BEB 300 (9048.01)

Input voltage	48 V DC (36 ... 72 V DC)
Input current (at 48 V)	2.4 A
Power consumption	max. 125 W
Overcurrent protection	fold back (at 110 ... 143% I_{OUT})
Overvoltage protection	16.8 ... 20 V
Max. current drain	8 A (-10 ... +43 °C)** 6 A (+55 °C)
Voltage stability	1500 V DC (input/ output)
Radio noise suppression	EN 55022 (CIS PR22) Class B [6] EN 61000-4-2,3,4,6,8 [7] / ENV 50204 [8]

Power supply BEB 300 (9048.02)

Input voltage	48 V DC (36 ... 72 V DC)
Input connection	Plug with screw termination, with polarity protection
Fuse	T 6.3 A/ 250 V "H" (5x20, internal")
Polarity reversal protection	yes
Power consumption	max. 110 W
Voltage stability AC	1500 V (input/ output)
Output DC voltage	12 V
Rippled noise ratio	66 dB
Output current	0.25 ... 8 A
Current limit	yes
Short circuit protection	yes, hicc-up mode
Overvoltage protection	yes (> 14.5 V)
Protection class	IP 20
Noise emission	EN 55011 [9], EN 55022 (CIS PR22) Class B [6], EN 50083-2 [2]
Immunity	EN 61000-6-1 [10]/ EN 61000-6-2 [11]
Temperature range	-10 … +60 °C

Environmental conditions

Temperature range	-10 … +55 °C
Relative humidity	≤ 80 % (not condensing)
Mounting method	vertical
Mounting location	splash-proof and drip-proof

Physical information

Dimensions (l x w x h)		
without 19" - adapter		50 x 276 x 148 mm
with 19" - adapter		50 x 301 x 148 mm
Weight	BEB 200, 300 (9048.02)	about 1,500 g
	BEB 300 (9048.01)	about 1,600 g

Delivery contents

1 x Power cord or connector
1 x Bus connector
2 x Terminal resistance 75 Ω
1 x Bus connector 400 mm
2 x Multipole sockets

* to reset device 2 minutes without voltage!
** > 6 A only use bus cable "8 A" !

10. Bibliography

[1] EN 60728-11: Cable networks for television signals, sound signals and interactive services Part 11: Safety (IEC 60728-11:2005); German version EN 60728-11:2005

[2] EN 50083-2 : Cabled distribution systems for television and sound signals. Electromagnetic compatibility for equipment; EN 50083-2:2001

[3] EN 60320-1: Appliance couplers for household and similar general purposes Part 1: General requirements (IEC 60320-1:2001 + A1:2007); German version EN 60320-1:2001 + A1:2007

[4] DIN VDE 0860: Audio, video and similar electronic apparatus, Safety requirements (IEC 60065:2001, modified + A1:2005, modified); German version EN 60065:2002 + A1:2006 + Cor.:2007 + A11:2008

[5] DIN VDE 0871: Radio noise suppression of high frequency units, Determination of limits for industrial, scientific and medical equipment, identical with CISPR 23 :1987

[6] EN 55022: Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (IEC/CISPR 22:2005, modified + A1:2005); German version EN 55022:2006 + A1:2007

[7] EN 61000-4-2: Electromagnetic compatibility (EMC) - Testing and measurement techniques-Electrostatic discharge immunity test, 2009-05-31

EN 61000-4-3: Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006 + A1:2007); German version EN 61000-4-3:2006 + A1:2008

EN 61000-4-4: Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4:2004); German version EN 61000-4-4:2004

EN 61000-4-6: Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-6:2003 + A1:2004 + A2:2006)

EN 61000-4-8: Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test (IEC 77A/694/FDIS:2009); German version FprEN 61000-4-8:2009

[8] ENV 50204: Radiated electromagnetic field from digital radio telephones - Immunity test, 1996-02-15

11. Document history

Version	Date	Modification	Author
1.00	15.04.2009	basic document	Häußer, Rudolph
1.01	11.08.2009	revision	Häußer
1.02	11.01.2010	insert of BEB 300 (9048.01)	Häußer
1.03	19.01.2011	insert of BEB 300 (9048.02)	Häußer
1.04	24.06.2014	information sheet added	Appelfelder
1.05	14.07.2015	new company	Häußer

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CE Declaration of Conformity

Manufacturer:	BLANKOM systems GmbH Hermann – Petersilge – Straße 1 07422 Bad Blankenburg Germany
Product Name:	Bus Extender
Type Name:	BEB 200, BEB 300
Type N°:	9047.01, 9048.01, 9048.02

BLANKOM systems GmbH confirms that the mentioned products meet the guideline(s) of the Council for the approximation of legislation of the member states.

Electromagnetic compatibility (2004/ 108/ EC)
The following standards are met: DIN EN 50083-2: 2007-04 (EN 50083-2:2006-06)

Low voltage guideline (2006/ 95/ EC)
The following standards are met: DIN EN 60950-1: 2006-04 (EN 60950-1:2006-11)
Information technology equipment -Safety-

Restriction of hazardous substances (2011/ 65/ EC)
The following standards are met: DIN EN 50581: 2013-02 (EN 50581:2012)

Bad Blankenburg, Germany, 2015-07-14

Wolfgang Schlüter
(Managing Director)